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Fraunhofer Management GmbH completes study on Thin Film Photovoltaics

The Fraunhofer Management GmbH, the consulting subsidiary of the Fraunhofer-Gesellschaft, the leading organisation for applied research in Germany, has completed a study on techno-economical aspects on thin film photovoltaics.

The study was performed during a six-month period in 1999 and incorporated numerous interviews with the relevant industry and research institutitions.

The main focus of the study covers the thin film systems suited for home- or industrial energy conversion i.e. a-Si, CdTe and CIS. Systems like multicrystalline Si, the „Graetzelzelle“ and GaAs were also considered in the first module of the study, but ruled out for a soon-to-come technology with larger economical impact.

One of the main conclusions of the study is, that pv systems in the 2 – 3 kWp range based on thin film technologies on glass substrates are not expected to become competitive to crystalline-silicon based systems until approx. the year 2008 and intensive research is mandatory to enable economical thin film pv production in the future.

This result is based on own calculations, intensive expert interviews and a critical review of the production costs cited in literature and various studys where very low costs are promised for large production capacities. However, in this capacity range economies of scale have a strong influence on the costs and up to now neither the production capacities themselves nor the appropriate and reliable large area processes are readily available. To coat large areas in the m^2 range with high material quality in terms of semiconductor specifications is the central problem in thin film pv.

In addition, area-dependend costs for installation increase the overall costs for systems with low-efficiency cells substantially due to the enhanced area requirements.

Both factors drive the real costs for thin film pv systems up quite substantially. Therefore today´s costs are much higher than today´s systems based on crystalline silicon. For the next future, cost

reduction due to scale-up and improvements in quality and yield are expected for thin film pv technologies. However, production costs for crystalline silicon have to be considered a moving target and hard to reach within the next 8 to 10 years.

As a conclusion, Fraunhofer Management GmbH sees a lot of tasks to be done in the thin film field to promote this technology to become competetive to well-know technologies already available for mass production.

Copies of the report are available and can be ordered directly at the Fraunhofer Management GmbH

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